

SPECIFICATION OF PATENT

COLLECTIVE BALANCE CALCULATION AUTOMATIC PROCESS SYSTEM

CROSS-REFERENCE TO RELATED APPLICATIONS

5 This application is a continuation application and
is based upon PCT/JP99/04437, filed on August 18, 1999.
[Technical Field]

10 This invention relates to a collective balance
calculation automatic process system, particularly to a
balance automatic process system, which comprises an
automatic transaction apparatus (Automated Tellers
Machine : ATM) provided at a cash corner in banks for
deposit and withdrawal and a host computer, wherein the
balance of all a customer's accounts can be checked
15 together according to a customer's request.

[Technical Background]

20 ATMs are in wide use with a card or a bankbook,
customers can make various transactions, including
automatic deposit and withdrawal, by manual operation, at
a variety of places. ATMs are usually operational outside
a bank's normal business hours, and offer a time
extension service as a part of a bank's customer
services. With such availability, ATMs have been
increasing in number and are now available in many
25 places, including department stores and station premises,
not to mentioning cash corners. Under these
circumstances, an improved service function for ATMs is a
focus of attention as an important step for acquiring new
customers.

30 As a service function of ATMs, calculation of the
total balance is widely known. For example, an automatic
transaction apparatus having total reference function for
doing total balance reference is disclosed in the patent
bulletin, JPP-6-139431. This apparatus is provided with a
35 balance reference function, by which the transaction
balance of a pre-registered account can be checked. The
apparatus, having such function, comprises a total

reference data input section for inputting the total
reference data of a customer having a plurality of
accounts, and an output section for outputting the data
of customer's plural accounts balance after having
5 collectively drawn and calculated the above mentioned
customer's accounts data.

The invention described above, however, requires
customer to register the accounts with his or her own
bank in advance. Therefore, an inconvenience occurs that
10 total reference of the accounts is limited to only for
the pre-registered accounts and non-registered accounts
cannot be totally checked.

There is another example, disclosed in the patent
bulletin, JPP-1-302468, which is an automatic transaction
15 apparatus capable of displaying the past transaction
records, as well as the transaction balance. According to
this example, the automatic transaction apparatus having
a balance displaying function comprises a management
section for managing the transaction information and
20 transaction balance, a display section for displaying the
transaction balance which is under management, a
reference section for performing reference transaction by
which the transaction balance stored in a recording
section is identified, and a control section for
25 performing control in a way that past transaction records
are displayed with the transaction balance upon
identifying the transaction balance. This example,
however has, as a purpose, a particular customer service
in which a customer's past transaction records is
30 displayed together with the transaction balance.

[Disclosure of the Invention]

The purpose of this invention is to provide a
collective balance calculation automatic process system,
35 by which a customer can easily make a total reference to
his or her account, without a need of pre-registration of
the accounts, wherein the account for total reference

includes each account opened at plural banks by one customer, all the accounts opened at a particular bank by one customer, and one or plural accounts which are required by the customer to be collectively calculated.

5 Further, the collective balance calculation automatic process system also enables the customer to easily enter a missing transaction record in any account (entry) if such record is found by the balance reference, and to easily deposit or transfer the money from his or her
10 other account into an particular account where the balance is short (minus balance), if such account is found by the balance reference.

To achieve the purpose of this invention described above, the first embodiment of this invention is
15 disclosed. According to the first embodiment, the collective balance calculation automatic process system is related to an automatic transaction system, comprising the host computer and a plurality of ATMs, by which a customer can automatically deposit or withdraw the money.

20 The above collective balance calculation automatic process system comprises an account data accumulation section for collectively storing the balance data from each customer account, an account balance data drawing section for drawing the balance in each customer account
25 from the account data accumulation section and collectively calculating it, first storage means for storing one or a plurality of bank codes, second storage means for storing one or a plurality of account numbers, and a medium data read out section for reading out
30 customer data recorded in a customer's medium and transmitting them to said account balance data drawing section.

The medium data read out section reads out the bank code and the account number from the medium, the read out
35 bank code being recorded in the first storage means, the read out account number being recorded in the second storage means, wherein if the read out account number is

not recorded, it is to be recorded and the medium is returned to the customer temporarily. The medium data read out section also performs the same process on other mediums inserted by the same customer and determines that the medium insertion is completed, with no insertion of another medium. The account balance data drawing section draws and collectively calculates the balance corresponding to the read out account number specified by each read out bank code, with referring to the account data accumulation section.

According to the second embodiment of this invention, which is also disclosed, the collective balance calculation automatic process system is related to the automatic transaction system, comprising the host computer and a plurality of ATMs, by which customer can automatically deposit or withdraw the money.

The above collective balance calculation automatic process system comprises the account data accumulation section for collectively storing the balance data from each customer account, the account balance data drawing section for drawing the balance in each customer account from the account data accumulation section and collectively calculating them, a storage means for storing one or a plurality of account numbers, and the medium data read out section for reading out the customer data recorded in customer's medium and transmitting them to the account balance data drawing section. The medium data read out section reads out the account number from the medium, the read out account number being recorded in the storage means, wherein if the read out account number is not recorded, it is to be recorded and the medium is returned to the customer temporarily.

The medium data read out section also performs the same process on other mediums inserted by the customer and determines that the medium insertion is completed, with no insertion of another medium. The account balance data drawing section draws and collectively calculates

the balance corresponding to the read out account number specified by each read out bank code, by referring to the account data accumulation section.

5 According to the preferred embodiments, the
collective balance calculation automatic process system
herein disclosed further comprises third storage means
for storing the existence or non-existence of a no-entry
and a no-entry detection section for detecting a no-entry
10 balance in each customer's account, wherein the no-entry
detection section draws the balance corresponding to the
read out account number specified by each read out bank
code, and, upon finding of the no-entry balance, sets a
flag in the third storage means through which compiling
15 of print data, and printing out are sequentially
performed.

Also, according to the preferred embodiments, the
collective balance calculation automatic process system
herein disclosed further comprises a fourth storage means
for storing the existence or non-existence of a minus
20 balance and a minus balance detection section for
detecting the existence or non-existence of a minus
balance in each customer's account, wherein the minus
balance detection section draws the balance corresponding
to the read out account number specified by each read out
25 bank code, and, upon finding of the minus balance, sets
the flag in the fourth storage means through which
compiling of print data and printing out are sequentially
performed.

This invention, having the constitution described
30 above, can be achieved by utilizing conventional hardware
and by partially replacing the software contained
therein, so that cost for system construction can be
minimized. Also, this invention enables customers to
check his or her desired account balance all together
35 without registering the account in advance. Not only
that, the invention guides customers, in the course of
the above processes, to manually perform a no-entry

process, and deposit or transfer upon finding of the minus balance. These function realized by this invention offers customers significantly convenient services, which can be enjoyed by customers at facility where the
5 invented ATM is installed, leading to an increased number of customer visits. Furthermore, while the invention can processes both the bank card and the bankbook, the invention can also be applied to an automatic cash
10 dispenser (CD). A description is to be presented later in another embodiment in which addition of new memories enables this invention to process other bank's accounts, as well as customers' own bank's account, so that customers have an advantage of a more convenient total balance reference service.

15 [Brief Description of Drawings]

 Fig.1 is a view showing a block construction representing one embodiment of the collective balance calculation automatic process system according to the
20 present invention.

 Fig.2 (A) is a view for explaining the magnetic stripe provided on a customer's magnetic card for an ATM transaction.

 Fig.2 (B) is a view for explaining the magnetic
25 stripe provided on a customer's bankbook for an ATM transaction.

 Fig.3 is a view for explaining one example of the stored contents in the memory 1 to 4 represented in
30 Fig.1.

 Fig.4 and Fig.5 are flow charts showing one example of processes performed in the collective balance calculation automatic process system represented in Fig.
35 1.

 Fig.6 and Fig.7 are flow charts showing processes performed upon finding of the no-entry balance during the course of processes represented in Fig. 4 and Fig. 5.

 Fig.8 and Fig.9 are flow charts showing processes

performed upon finding of the minus balance in customer's account during the course of processes represented in Fig.4 and Fig.5.

5 Fig.10 and Fig.11 are flow charts showing processes on another example, performed in the collective balance calculation automatic process system represented in Fig.1.

10 Fig.12 is a view of a receipt printed out and ejected, for customer, from an ATM in the processes represented in Fig.4 to Fig.11.

[Preferred Embodiments for Practice]

15 Fig.1 is a view showing the block constitution representing one embodiment of the collective balance calculation automatic process system herein disclosed. As mentioned before, several ATMs are installed in a variety of places, and each ATM is connected, for example via a communication line L, to a host computer 1. As indicated in this drawing, an ATM basically comprises an operation
20 screen / touch panel 2a for displaying the operational steps of ATMs for customers, a card reader / receipt printer 2b as an input / output device for customers' data, a bankbook process section 2c for processing the contents of the bankbook, a microcomputer (CPU) 2d for
25 controlling operations between the host computer 1 and a ATM 2, and a memory 2e for storing a variety of programs, needed for automatic transaction, and affiliated data.

Also, according to the collective balance calculation automatic process system herein disclosed,
30 the host computer 1 includes an account data accumulation section 11, an account balance data transaction section 12, a minus balance detection section 13, and a no-entry detection section 14. Further, ATM 2 includes a display section 21, an input section 22, a medium data read out
35 section 23, a print out data compilation section 24, print out section 25, and memories 26 to 29. These components are connected each other via a bus line BL

and, as described above, the units in the host computer and the units in ATM are connected, for example, via the communication line L.

5 In the constitution described here, the display section 21 displays an operational guidance explaining to customers the operational steps, and the input section 22 is a unit through which an instruction by a customer is entered. Both above sections correspond to the operation screen / touch panel 2a, respectively. The medium data
10 read out section 23 reads out the data (stored data in the magnetic stripes shown in Fig.2 (A), Fig.2 (B), or the IC card (no drawing)) on a medium (card or bankbook) inserted by a customer, and ejects the medium after having finished predetermined processes, the
15 section corresponding to the card reader 2b and the bankbook process section 2c. The print data compilation section 24 compiles the collectively calculated balance into a viewable form. The print out section 25 prints out the compiled balance on a receipt and ejects it. The
20 memories 1 to 4 (26 to 29) store bank codes and account numbers and corresponds to the memory 2e.

Also, the account data accumulation section 11 totally stores the data collected from each account. The account balance data drawing section 12 draws the balance
25 from the account data accumulation section 11. The minus balance detection section 13 detects whether the account balance is minus or not. The no-entry detection section 14 detects the existence or non-existence of the entry data for the bankbook.

30 Fig. 2 (A) is a view for explaining the magnetic stripe provided to customer's magnetic card for ATM operation. Fig.2 (B) is the view for explaining the magnetic stripe provided to customer's bankbook for AM operation. The magnetic stripes contain data, including
35 customer's bank code and account number. Upon insertion of the media (card or bank book) into the ATM by a customer, the medium data read out section 23 reads out

the customer data from the magnetic stripe, and transmits the read out customer data, via the communication line L, to the account balance data drawing section 12 in the host computer 1.

5 Fig.3 is a view for explaining the stored contents in memories 1 to 4. The memory 1 (26) stores a plurality of bank codes 1 to n, which are to be processed by the collective balance calculation automatic process system. The memory 2 (27) sequentially stores the
10 account numbers, which are read out by the medium data read out section 23. The memory 3 (28) stores the prescribed displays indicating the existence or non-existence of the no-entry account. The memory 4 (29) stores the prescribed displays indicating the existence
15 or non-existence of the balance-shorted (minus balance) account.

 Fig.4 and Fig.5 are the flow charts showing one example of the process performed in the collective balance calculation automatic process system. As shown in
20 Fig.4, first " initial screen " is displayed on ATM's display section (S 1). When a customer presses a " collective balance calculation " display (S 2) on the display screen, a " medium insertion screen " is displayed. At the same time, a voice instruction, saying
25 " Please, insert your card or bankbook. ", comes up (S 4). The customer, following the voice instruction, inserts the card or bankbook into ATM's input section (S 5).

 ATM's medium read out section 23 reads out the bank code (S 6), and also reads out the account number (S 7
30), from the magnetic stripe on customer's card or bankbook. Next step is a determination on whether the read out bank code is in the memory 1 or not (S 8), wherein a finding of the bank code in the memory 1 produces (YES) answer. Then determination on whether
35 the read out account number is in the memory 2 or not follows (S 9), wherein not finding the account number in the memory 2 produces (NO) answer. The account

number not found is stored in the memory 2 (S 10), and the card or the bankbook is temporarily ejected (S 11).

Meanwhile, as shown in Fig.5, the card or bankbook is also temporarily ejected out in the both cases, where
5 the bank code is not found in the memory 1 (NO) at step S 8 and the account number is found in the memory 2 (YES) at step S 9. Subsequently, a " medium reinsertion screen " is displayed on the screen (S 12), which is followed by either a voice instruction, saying " Please,
10 insert your card or bankbook of another account number. " or " Please, press the completed button. " (S 13).

According to the voice instruction, the customer either inserts the card or bankbook of another account number, or presses the " completed " button (S 14). ATM
15 determines whether other card or bankbook is inserted or not (S 15), and no insertion produces (NO) answer, which is followed by displaying of " processing screen " (S 16). Then a voice guidance comes up, saying " Calculation is proceeding. Thank you for waiting. " (S
20 17). On the other hand, when other card or bankbook is inserted at S 15 (YES), the customer performs steps 6 to S 15 once again, and repeats those steps until other cards or bankbooks are all processed.

With no insertion of card or bankbook at step S 15,
25 the account balance data drawing section 12 draws the balance from each bank account (S 18), wherein the account balance data drawing section 12 drawing the balance from other bank's host computer upon finding of other bank's account, while drawing the balance from its
30 own bank's host computer upon finding of no more account of other bank. Then the print out compilation section 24 compiles the print out data (S 19), and the print out section 25 prints out the receipt and ejects it (S 20). A voice guidance follows, saying " Please, check your
35 receipt. " (S 21). An example of a printed out receipt is shown in Fig.12.

Fig.6 and Fig.7 are flow charts showing processes

performed upon finding of a non-entry in the bankbook during the course of processes represented in Fig.4 and Fig.5. At the process indicated at S 18 shown in Fig.5, the customer's account can be guided to the no-entry process, after the balance drawing from each bank account, without proceeding to the print out data compilation (reference at S 19). This particular process is aimed for improvement of customer service.

After the balance in each bank account is drawn at step S 18, the no-entry detection section 14 determines the existence or non-existence of the no-entry (S 31), and, upon finding of no-entry (YES), sets " 1 " in the memory 3 (S 32). The print out data compilation section 24 compiles the print out data (S 33), and the print out section 25 prints out the receipt and ejects it out (S 34). Then a voice guidance follows, saying " Please, check your receipt " (S 35). The example of the receipt is shown in Fig.12. Also, upon non-existence of the no-entry at step S31 (NO), the print out compilation section 24 compiles the print out data. The print out compilation section then determines whether the contents of the memory 3 is " 1 " or not (S 36), where " 1 " produces (YES) answer to be followed by determination on whether the print out in the bankbook is possible or not (S 37).

As indicated in Fig.7, (YES) answer is produced if the print out is possible at step S37, which leads to a display of " check screen " on the display section 21 (S 38). A vocal guidance follows, saying " You have a no-entered account. Would you like to make an entry? " (S 39). Following to the guidance, the customer makes his or her decision to press the " entry " button, or " no " button, or not to press the button (no press) (S40). According to customer's decision, " entry " or not is determined (S 41), where " entry " produces a (YES) answer for subsequent execution of the entry process (S 42).

Meanwhile, no printing out in the bankbook at step S 37 (NO) results in a display of " check screen " (S 43). The voice guidance follows, saying " You have a no-entry account. Please, make an entry at your earliest convenience. " (S 44).

When " 1 " is not set at step S 36 (NO), or no-entry at S 41 (NO), operational status returns to S1, standing by for next customer. Display of " check screen " at step S43 also results in the returning to step S 1.

Fig.8 and Fig.9 are the flow charts showing the processes performed upon finding of the minus balance during the course of processes represented in Fig.4 and Fig.5. In the process at step S 18 shown Fig.5, customer's account can be guided, after the balance drawing from each bank account, to the deposit / transfer process without proceeding to the print out data compilation, as an improved customer service.

After the balance in each bank account is drawn at step S 18, the minus balance detection section 13 determines the existence or non-existence of the balance shortage (S 51), producing (YES) answer upon finding a balance shortage, and sets " 1 " in the memory 4 (S 52). Then the print out data compilation section 24 compiles the print out data (S 53), and the print out section 25 prints out the receipt and ejects it out (S 54). The voice guidance follows, saying " Please, check your receipt. " (S 55). An example of the receipt is shown in Fig.12. Also, upon not finding a balance shortage at step S 51 (NO), step S 53 follows to print out the data. Then, whether the contents of the memory 4 is " 1 " or not is determined (S 56).

Subsequently, as shown in Fig.9, " 1 " at step S 56 produces (YES) answer, which is followed by display of the " check screen ". Then the vocal guidance comes up, saying " You have a balance shortage in your account. Would you like to make deposit or transfer? " (S 58). According to his or her decision on the voice guidance,

the customer makes the next move, which is pressing of " deposit " button, or " transfer " button, or " no " button, or not pressing any button (S 59). Then whether " deposit " or not is determined (S 60), and " deposit " (YES) leads to the deposit process (S 61).

Meanwhile, a no deposit result at step S 60 (NO) is followed by a determination on transfer or no transfer (S 62). The result for transfer (YES) leads to the transfer process (S 62). Also, in each case, where no setting of " 1 " in the memory 4 at step S 56 (NO) and no transfer at step S 62 (NO), the operational status returns to step S 1 in Fig.4, to wait for another customer.

Fig.10 and Fig.11 are the flow charts showing the processes of another example, performed in the collective balance calculation automatic process system shown in Fig.1. The example represented in the above flow charts is a case in which the memory 1 storing a plurality of bank codes is eliminated. In this example, accesses from other banks' host computers to this system have no limitation. Therefore, as indicated in the Figures, the process shown at step S 8 in Fig.4, which is " whether the bank code is in the memory of the first storage mean 1 or not " becomes unnecessary. Other steps performed in this example are the same ones shown in Fig.4 and Fig.5, which means that the each step (S 8 to S 20) in Fig.10 and Fig.11 correspond to each step (S 9 to S 21) in Fig.4 and Fig.5. Therefore, more a specific explanation is omitted.

Fig.12 is a view of the receipt printed out and ejected, out for customer, from ATM in the processes represented in Fig.4 to Fig.11. In the Figure, " - " symbol attached to a bank code " 0099 " represents the minus balance , and " * " symbol attached to a bank code " 0088 " represents an entry instruction to an account specified by account number " 3333333 ".

[Industrial Application Field]

As mentioned before, a conventional system has an inconvenience that requires customers to register their accounts in their own banks beforehand, wherein only the pre-registered accounts are checked all together and the accounts not pre-registered cannot be checked. According to this invention, customers can perform, without the account being pre-registered, the collective balance calculation on each desired account with an easy operation, which is achieved by software replacements by utilizing conventional hardware, resulting in a low system construction cost. Thus, customers can easily perform various transactions at various places, using a card or a bankbook, by their own manual operation, the transactions including automatic deposit and drawing. This invention has a great potential for application in the industrial field.

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